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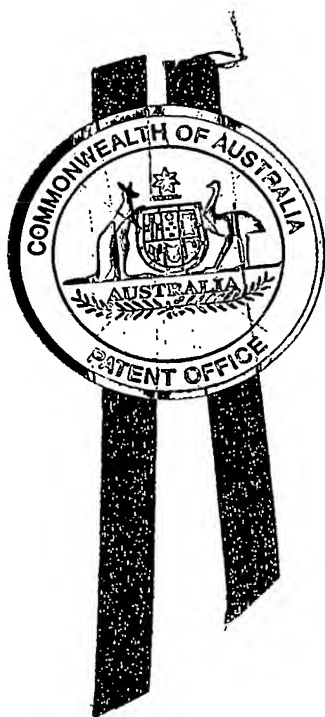
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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003901364 for a patent by RAYMOND LEONARD BUTLER and RICHARD JOHN BARRINGTON as filed on 25 March 2003.



WITNESS my hand this  
Seventh day of April 2004

JULIE BILLINGSLEY  
TEAM LEADER EXAMINATION  
SUPPORT AND SALES

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**AUSTRALIA**  
**Patents Act 1990**

**PROVISIONAL SPECIFICATION FOR**

**“RETARDENT AND POSITIONALLY  
ENHANCED FIRE  
SPRINKLER/SPRAY SYSTEM”**

**The invention is described in the following statement:**

**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY ENHANCED FIRE SPRINKLER/SPRAY SYSTEM"**

THE PRESENT INVENTION RELATES TO THE ENHANCEMENT OF FIRE SPRINKLER/SPRAY SYSTEMS (USED FOR BUILDING EXTERIORS, BUILDING GROUNDS, BUILDING INTERIORS, SHIPS, AIRCRAFT, VEHICLES USED FOR FIRE FIGHTING) FOR THE PURPOSE OF EXTINGUISHING FIRE OR RETARDING ITS CAPACITY TO IGNITE OR DAMAGE FLAMMABLE MATERIALS OR DAMAGE OTHER NON-FLAMMABLE MATERIALS BY HEAT TRANSFER.

FOR MANY YEARS BUSH/FOREST FIRES HAVE CAUSED EXTREME DAMAGE TO BUILDINGS AND GROUNDS EXPOSED TO THEIR VIOLENT HEAT, THEIR FLAMES AND AIRBORNE EMBERS. FIRE SPRINKLER SYSTEMS USING WATER AS THE EXTINGUISHING MEDIUM HAVE BEEN IN USE FOR SOME TIME ON BUILDING ROOFS AND SURROUNDING GROUNDS TO KEEP THREATENED AREAS DAMP AND COOLER IN THE FACE OF FIRE ATTACK. HOWEVER, SIGNIFICANT WATER FLOW IS REQUIRED FOR A PROLONGED PERIOD FOR WATER TO BE EFFECTIVE IN THIS SITUATION.

FIRE RETARDENTS ARE USED BY FIRE FIGHTING AGENCIES THROUGH HOSES AND OTHER SIMILAR EQUIPMENT AS WELL AS FROM AIRCRAFT TO ASSIST WATER IN ITS CAPACITY AS A FIRE FIGHTING TOOL. HOWEVER, THE TYPES OF RETARDENTS WHICH HAVE BEEN IN USE FOR MANY YEARS DO NOT LEND THEMSELVES TO USE IN SPRINKLER/SPRAY SYSTEMS. SOME ARE CORROSIVE, SOME ARE TOO VISCOUS TO BE FORMED INTO DROPLETS THROUGH A SPRINKLER HEAD, OTHERS FORM A DENSE FOAM WHICH BLANKETS THE FIRE DEPRIVING IT OF OXYGEN, WHILE OTHERS STILL ARE TOXIC AND UNSAFE FOR USE IN MANY SITUATIONS. NOW AVAILABLE ARE RETARDENTS WHICH HAVE VERY SMALL VISCOSITY CHANGES WHEN USED IN THE RECOMMENDED PROPORTIONS, LOW TOXICITY AND VERY GOOD RETARDENT AND EXTINGUISHING CAPABILITIES OVER A LARGE RANGE OF COMBUSTIBLE MATERIALS. IT IS THESE RETARDENTS WHICH RELATE TO THE PRESENT INVENTION.

**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY ENHANCED FIRE SPRINKLER/SPRAY SYSTEM"**

CORRESPONDINGLY, HEAT-ACTIVATED FIRE SPRINKLER/SPRAY SYSTEMS HAVE BEEN COMMON, IF NOT MANDATORY, IN SOME BUILDINGS FOR MANY YEARS. THESE SYSTEMS DOUSE LOCALISED AREAS WITH WATER WHERE HEAT GENERATED FROM THE FIRE ACTIVATES THE SYSTEM. THESE SYSTEMS ARE MAINLY USED IN COMMERCIAL OR MULTI-STOREY BUILDINGS.

IT IS ACCORDINGLY THE OBJECT OF THE PRESENT INVENTION TO PROVIDE MEANS OF INCREASING THE EFFICIENCY OF ALL THESE FIRE SPRINKLER/SPRAY SYSTEMS BY:

1. INTRODUCING AN EFFECTIVE AND COMPATIBLE FIRE RETARDENT INTO THE WATER FLOW.
2. PROVIDING POSITIONING OF EXTERIOR SPRINKLERS IN SUCH A MANNER AS TO MAKE THE LIQUID BEING PUMPED THROUGH THEM MORE EFFECTIVE BY THEIR RELATIONSHIP TO THE FIREFRONT.

ACCORDING TO THE PRESENT INVENTION, THE SPRINKLER DESIGN IS SUCH THAT A PROPORTIONING SYSTEM FOR INTRODUCING THE RETARDENT INTO THE WATER FLOW TO THE SPRINKLERS IS ATTACHED TO THE PIPEWORK LEADING TO THE SPRINKLERS. THE RETARDENT MAY ALSO BE INTRODUCED BY PREMIXING IN A WATER RESERVOIR AND THEN PUMPED THROUGH THE PIPING TO THE SPRINKLERS.

THE PRESENT INVENTION ALLOWS FOR SPRINKLERS TO BE POSITIONED AT 90° IN RELATION TO THE EXTERIOR WALLS SO THAT ANY STRONG WINDS ACCOMPANYING A FIRE AND MOVING THE FIRE IN THE DIRECTION OF THE BUILDING WILL THEN PROPEL THE LIQUID BEING EJECTED FROM THE SPRINKLER ON TO THE VERTICAL WALL SURFACE THUS ALLOWING INCREASED EFFECTIVENESS OF THE PROTECTIVE CAPACITY OF THE LIQUID. QUITE OFTEN, SPRINKLERS WHICH ARE PLACED AT ROOF LEVEL IN A VERTICAL POSITION HAVE MUCH OF THEIR EFFECTIVENESS NEGATED BY STRONG WINDS WHICH BLOW THE LIQUID AWAY FROM THE BUILDINGS.

**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY ENHANCED FIRE SPRINKLER SYSTEM"**

THE ADDITION OF RETARDENT INTO THE WATER FLOW WILL INCREASE THE CAPACITY OF WATER TO EXTINGUISH BURNING EMBERS BEFORE THEY ARE FORCED BY PRESSURE OF THE STRONG WIND INTO CREVICES LEADING TO ROOF OR WALL INTERIOR

THE PRESENT INVENTION ALLOWS FOR A DECREASE IN THE POTENTIAL FOR WATER TO DAMAGE BUILDING INTERIORS WHEN A FIRE HAS CAUSED ACTIVATION OF THE SPRINKLER SYSTEM BECAUSE AVAILABLE FIRE RETARDENTS CAN DECREASE THE AMOUNT OF WATER NEEDED BY A SUBSTANTIAL AMOUNT, IN ORDER TO EXTINGUISH A FIRE. THE INCREASED EFFICIENCY OF RETARDENTS ALSO GIVES A CORRESPONDING INCREASE IN SAFETY FOR BUILDING OCCUPANTS AT THE TIME OF A FIRE.

THE PRESENT INVENTION ALLOWS FOR INCREASED EFFICIENCY OF SPRINKLER SYSTEMS ON BOARD SHIPS AND AIRCRAFT AND IN SPRAY SYSTEMS DESIGNED FOR CREW SAFETY IN FIRE FIGHTING VEHICLES BY THE INTRODUCTION OF A FIRE RETARDENT INTO THE WATER FLOW.

ONE EMBODIMENT OF THE PRESENT INVENTION WILL NOW BE DESCRIBED WITH REFERENCE TO THE ACCOMPANYING DRAWINGS IN WHICH

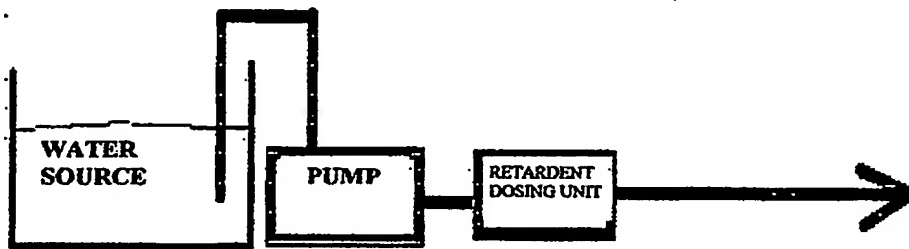
FIG 1. IS A ONE DIMENSIONAL VIEW OF THE PRESENT INVENTION WHERE RETARDENT IS ADDED TO THE WATER SUPPLY PRIOR TO BEING EXPELLED THROUGH THE SPRINKLERS FOR PARTICULAR PURPOSES AS SHOWN.

FIG 2. IS A ONE DIMENSIONAL SIDE VIEW OF A SPRINKLER FIXED IN A VERTICAL POSITION (90%) IN RELATION TO A BUILDING EXTERIOR WALL.

**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY  
ENHANCED FIRE SPRINKLER/SPRAY SYSTEM"**

**FIG. 1**

**RETARDENT CAN BE ADDED DIRECT TO WATER  
SOURCE OR TO WATER FLOW VIA DOSING UNIT**



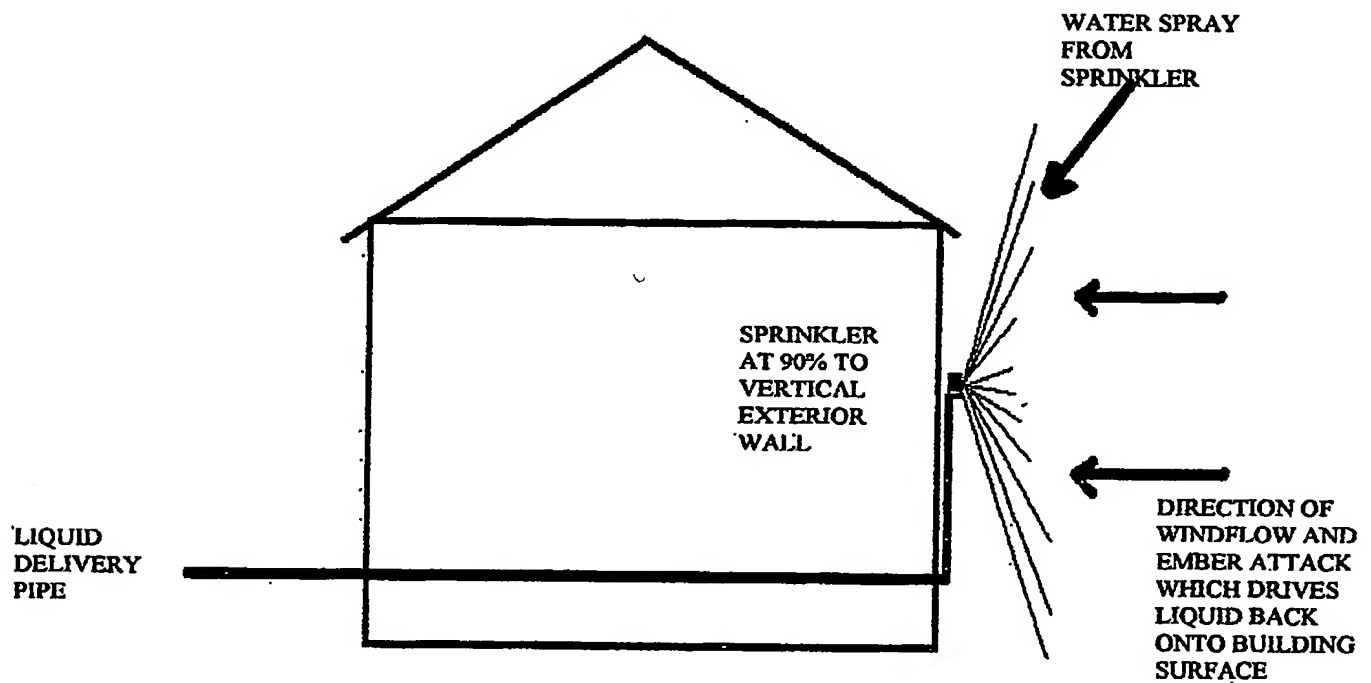
**FLOW OF WATER MIXED  
WITH RETARDENT TO**

**SPRINKLER/SPRAY SYSTEM  
ON  
BUILDING EXTERIOR  
OR  
BUILDING INTERIOR  
OR  
SHIP  
OR  
AIRCRAFT  
OR  
FIRE FIGHTING VEHICLE  
WHICHEVER THE CASE MAY  
BE.**

**FROM THE BUILDINGS.**

**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY  
ENHANCED FIRE SPRINKLER/SPRAY SYSTEM"**

**FIG.2**



**"PROVISIONAL SPECIFICATION FOR RETARDENT AND POSITIONALLY  
ENHANCED FIRE SPRINKLER/SPRAY SYSTEM"**

**ABSTRACT**

The enhanced sprinkler/spray system utilises a new generation fire retardent which is compatible with sprinkler/spray systems to increase the capability of water in fire fighting and positional location of individual sprinklers on vertical exterior walls to provide increased efficiency in such systems.



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